AMENDMENT TO THE CLAIMS

This listing of the claims will replace all prior versions, and listings, of claims in the application:

Listing of the claims:

1. (Previously Presented) A mems transducer comprising:

a printed circuit board comprising a plurality of layers, at least one layer comprising a conductive material and at least one layer comprising an insulating material;

a cover comprising a conductive layer, the printed circuit board and the cover forming at least a portion of a housing, the housing comprising an aperture for receiving a signal and an inner lining for providing a shield against an electromagnetic interference, the conductive layer and the at least one layer of a conductive material; and

a transducer unit mounted within the housing.

2. (Previously Presented) The mems transducer of Claim 1 further comprising a spacer member between the printed circuit board and the cover, the spacer member cooperating with the printed circuit board and the cover to form the housing, the spacer member comprising a sidewall at least partially covered by a conductive material, the conductive material providing a portion of the inner lining.

3. (Previously Presented) The mems transducer of Claim 2 further comprising a first layer of conductive adhesive for joining the spacer member to the cover.

4. (Previously Presented) The mems transducer of Claim 3 further comprising a second layer of conductive adhesive for joining the spacer member to the circuit board.

5. (Previously Presented) The mems transducer of Claim 1 further comprising an environmental barrier located within the aperture.

6. (Previously Presented) The mems transducer of Claim 5 wherein the aperture is within the cover, the cover comprising a nonconductive layer for providing the environmental barrier.

7. (Previously Presented) The mems transducer of Claim 5 wherein the aperture is located within the cover, the cover comprising a polymeric layer for providing the environmental barrier.

8. (Previously Presented) The mems transducer of Claim 5 wherein the aperture is located within the ed circuit board, the printed circuit board comprising a polymeric layer for providing the environmental barrier.

9. (Previously Presented) The mems transducer of Claim 5 wherein the environmental barrier comprises a polymeric material.

10. (Previously Presented) The mems transducer of Claim 9 wherein the polymeric material is a film.

11. (Previously Presented) The mems transducer of Claim 10 wherein the film comprises a polytetrafluoroethylene.

12. (Previously Presented) The mems transducer of Claim 1 wherein the conductive material comprises copper.

13. (Previously Presented) The mems transducer of Claim 1 wherein the printed circuit board comprises a plurality of layers of a conductive material and a plurality of layers of an insulating material.

14. (Previously Presented) The mems transducer of Claim 13 wherein one of the plurality of layers of a conductive material comprises a pair of lead pads for electrical connection to the transducer unit.

15. (Previously Presented) The mems transducer of Claim 14 wherein one of the plurality of layers of a conductive material provides a first electrical ground plane.

16. (Previously Presented) The mems transducer of Claim 15 wherein one of the plurality of layers of a conductive material provides a second electrical ground plane.

17. (Previously Presented) The mems transducer of Claim 16 wherein the first and second ground planes are electrically connected to the pair of lead pads.

18. (Previously Presented) The mems transducer of Claim 17 wherein one of the plurality of layers of a conductive material comprises a pair of connectors for electrical connection to an external transducer.

19. (Previously Presented) A mems transducer comprising:

a transducer unit; and

a housing substantially covering the transducer unit and providing protection against an electromagnetic interference, the housing comprising a first layer of a non-conductive material and a second layer of a conductive material substantially covering the first layer, the second layer substantially forming an inner lining of the housing, the housing further comprising an aperture for receiving a signal into the housing.

20. (Previously Presented) The mems transducer of Claim 19 further comprising a third layer of a nonconductive material, the third layer substantially covering the aperture for providing an environmental barrier.

21. (Previously Presented) The mems transducer of Claim 20 wherein the third layer comprises a polymeric material.

22. (Previously Presented) The mems transducer of Claim 21 wherein the polymeric material is a polytetrafluoroethylene.

23. (Previously Presented) The mems transducer of Claim 19 further comprising a retaining ring, the transducer unit engaging the retaining ring.

24. (Withdrawn) A silicon mems transducer comprising: a transducer unit;
a substrate including an upper surface having a recess formed therein, the transducer unit attached to the upper surface of the substrate overlapping at least a portion of the recess wherein a back volume of the transducer unit is formed between the transducer unit and the substrate; and
a cover placed over the transducer unit, the cover including an aperture.

25. (Withdrawn) A silicon mems transducer comprising:

a transducer unit;

a substrate including an upper surface for supporting the transducer unit;

a cover placed over a portion of the substrate, the cover comprising an aperture and an inner surface, a portion of the inner surface comprising a metallic material for shielding the transducer unit from an interference signal.

26. (Withdrawn) A mems transducer comprising:

a transducer unit;

a substrate including an upper surface for supporting the transducer unit;

a cover sealed over a portion of the substrate, the cover having an aperture for receiving a signal and an inner surface comprising a shielding material for protecting the transducer from an interference signal.

27. (Withdrawn) A mems transducer comprising:

a transducer unit;

a substrate comprising a layer of an insulating material and a layer of conductive material, the substrate further comprising a surface for supporting the transducer unit;

a cover placed over a portion of the substrate; the cover comprising a shielding material for protecting the transducer from an interference signal.

28. (Withdrawn) A mems transducer comprising:

a printed circuit board comprising a first insulating layer and a first conductive layer; a transducer unit supported by the printed circuit board; and

a cover over a portion of the printed circuit board and forming a housing therewith for protecting the transducer unit, the cover comprising an aperture, a second insulating layer, and a second conductive layer, a portion of the second conductive layer exposed to a conductive spacer and electrically connected to a ground via the conductive spacer for shielding the transducer from an interference signal.

29. (Withdrawn) A mems transducer comprising:

a printed circuit board comprising a first insulating layer, a first conductive layer, and an aperture;

a transducer unit; and

a cover over a portion of the printed circuit board and forming a housing therewith for protecting the transducer unit, the cover comprising a second insulating layer and a second conductive layer, a portion of the second conductive exposed to a conductive spacer and electrically connected to a ground via the conductive spacer for shielding the transducer from an interference signal.

30. (Withdrawn) A mems transducer housing for a silicon mems transducer, the mems transducer housing comprising:

an inner lining for providing a shield from an electromagnetic interference, the inner lining comprising an aperture adapted for receiving an acoustic signal;

a circuit board comprising a first insulating layer and a first conductive layer, the first conductive layer forming at least a portion of the inner lining; and

a cover comprising a second conductive layer forming at least a portion of the inner lining.

31. (Withdrawn) A method of producing a mems transducer, the method including the steps of:

providing a housing comprising a first layer of a non-conductive materi comprising a conductive material substantially covering the non-conductive material, and an aperture for receiving an acoustic signal;

providing a transducer ; and

mounting the transducer within the housing wherein the inner lining provides an electromagnetic interference protection to the transducer unit.

32. (Withdrawn) The method of Claim 31 further comprising the steps of providing an environmental barrier layer comprising a polymeric material filter; and

securing the environmental barrier layer to housing and over the aperture wherein the environmental barrier layer provides a protection from environmental conditions to the transducer while allowing a substantial portion of the acoustic signal to pass through the aperture.

33. (Withdrawn) The method of Claim 32 further comprising the step of providing second layer of a conductive material between the first layer and the environmental barrier layer.

34. (Withdrawn) The method of Claim 33 further comprising the steps of:

providing a third layer of a conductive material; and

attaching the third layer to the environmental barrier layer wherein the environmental barrier layer is between the second layer and the third layer.

35. (Withdrawn) The method of Claim 34 further comprising the steps of providing a fourth layer of a non-conductive material; and depositing the fourth layer on the third layer.

36. (Withdrawn) The method of Claim 35 further comprising the steps of providing a fifth layer of a conductive material; and depositing the fifth layer on the fourth layer.

37. (Withdrawn) The method of Claim 36 wherein the housing further comprises a cover, the cover comprising an outer layer of non-conductive material and inner layer of a conductive material substantially covering the outer layer and providing at least a portion of the inner lining.

38. (Withdrawn) The method of Claim 37 wherein the cover further comprises an external layer of a conductive material secured to the outer layer and forming a portion of an outer surface of the housing.

39. (Previously Presented) The mems transducer Claim 3 wherein the conductive adhesive may or may not form a continuous gasket between the spacer member and the cover.

40. (Previously Presented) The mems transducer of Claim 4 wherein the conductive adhesive may or may not form a continuous gasket between the spacer member and the circuit board.

41. (New) The mems transducer Claim 1 wherein the printed circuit board includes an upper surface having a recess formed therein, the transducer unit attached to the upper surface of the printed circuit board overlapping at least a portion of the recess wherein a back volume of the transducer unit is formed between the transducer unit and the printed circuit board.

42. (New) The mems transducer Claim 1 wherein the printed circuit board includes a pocket formed therethrough, the transducer unit attached to the printed circuit board and overlapping at least a portion of the pocket wherein a back volume of the transducer unit is formed by cooperation of the transducer unit and the pocket.